

Transmittal Letter to the United States
Designated/Elected Office (DO/EO/US)

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FORM PTO-1390

10/088286

JCTU RECD PCT/PTO 15 MAR 2002

Docket No. **HM-480PCT**
U.S. Application No.
International Application No **PCT/EP00/09058** ✓
International Filing Date **September 16, 2000** ✓
Priority Date Claimed **September 16, 1999** ✓
Title of Invention **DEVICE FOR RAISING AND WITHDRAWING A BACK-UP ROLL BEARING UNIT**
Applicant(s) for (DO/EO/US) **Karl-Friedrich Müller and Volker Kunze** ✓

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U S C 371
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U S C 371
3. ☒ This express request to begin national examination procedures 35 U S C 371 (f) at any time rather than delay examination until the expiration of the applicable time limit set forth in 35 U S C 371(b) and PCT Articles 22 and 39(1)
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date
5. ☒ A copy of the International Application as filed [35 U S C. 371(c)(2)].
 - a) ☒ is transmitted herewith (required only if not transmitted by the International Bureau)
 - b) ☐ has been transmitted by the international Bureau.
 - c) ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English [35 U.S.C 371(c)(2)]
7. ☐ Amendments to the claims of the International Application under PCT Article 19 [35 U.S.C 371(c)(3)].
 - a) ☐ are transmitted herewith (required only if not transmitted by the International Bureau)
 - b) ☐ have been transmitted by the International Bureau
 - c) ☐ have not been made, however, the time limit for making such amendments has **NOT** expired
 - d) ☐ have not been made and will not be made
8. ☐ A translation of the amendments to the claims under PCT Article 19 [35 U.S.C 371(c)(3)]
9. ☒ An oath or declaration of the inventor(s) [35 U.S.C.371(c)(4)]. **UNSIGNED**
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 [35 U S C 371(c)(5)].

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98
12. ☐ An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment
14. ☐ A substitute specification
15. ☐ A change of power of attorney and/or address letter
16. ☒ (other items or information) **Three sheets of drawings, PT0-1449 w/ 4 references and International Search Report**

EXPRESS MAIL No. EF 020 489 089 US Deposited. March 15, 2002

I hereby certify that this correspondence is being deposited with the United States Postal Service Express mail under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, DC 20231.



Friedrich Kueffner

March 15, 2002

Date

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17. ☒ The following fees are submitted.

BASIC NATIONAL FEE [37 CFR 1.492(a)(1)-(5)]:

- ☒ Search Report has been prepared by the EPO or JPO. \$ 890.00
☐ International preliminary examination fee paid to USPTO [37 CFR 1.482] \$ 710.00
☐ No International preliminary examination fee paid to USPTO [37 CFR 1.482]
but International search fee paid to USPTO [37 CFR 1.445(a)(2)] \$ 740.00
☐ Neither International preliminary examination fee [37 CFR 1.482] nor
International search fee [37 CFR 1.445(a)(2)] paid to USPTO \$ 1040.00
☐ International preliminary examination fee paid to USPTO [37 CFR 1.482]
and all claims satisfied provisions of PCT Article 33 (2) to (4) \$ 100.00

ENTER APPROPRIATE BASIC FEE AMOUNT: \$ 890.00

Surcharge of \$ 130.00 for furnishing the oath or declaration later than 20 30 months
from the earliest claimed priority date [37 CFR 1.492(e)]

Claims	filed	Extra	Rate
Total Claims	6	-20=	x \$ 18 =
Indep. Claims	1	-3=	x \$ 84 =
Multiple Dependent Claims (if applicable) + \$ 280 =			

TOTAL OF ABOVE CALCULATIONS: \$ 890.00

Reduction by $\frac{1}{2}$ for filing by small entity, if applicable. Verified Small Entity
Statement must be filed also [Note 37 CFR 1.91 27, 1.28]

(divided by 2)

SUBTOTAL: \$ 890.00

Processing fee of \$ 130.00 for furnishing the English Translation later than 20 30 months
from the earliest claimed priority date [37 CFR 1.492(f)]

TOTAL NATIONAL FEE: \$ 890.00

Fee for recording the enclosed assignment [37 CFR 1.21(h)] The assignment must be
accompanied by an appropriate cover sheet [37 CFR 3.28, 3.31] \$ 40.00 per property

TOTAL FEES ENCLOSED: \$ 890.00

AMOUNT TO BE REFUNDED: Refunded \$

AMOUNT TO BE CHARGED: Charged \$

- a) ☒ A check in the amount of \$ 890.00 to cover the above fees is enclosed.
b) ☐ Please charge my Deposit Account No. 11-1835 in the amount of \$ to cover the above fees.
A duplicate copy of this sheet is enclosed.
c) ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. 11-1835. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 36 CFR 1.494 or 1.495 has not been met, a petition to revive [37 CFR 1.137(a) or (b)] must
be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Friedrich Kueffner
317 Madison Avenue
Suite 910
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Friedrich Kueffner
Name


signature

29,482
Reg. No.

March 15, 2002
Date

10/088286

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

HM-480PCT

Applicant(s) : Karl-Friedrich Müller, et al
Serial No. : NOT YET KNOWN (PCT/EP00/09058)
Int. Filed : September 16, 2000
For : DEVICE FOR RAISING AND WITHDRAWING A BACK-UP
ROLL BEARING UNIT

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

S I R:

In advance of the first office action, please amend the claims
as follows:

IN THE CLAIMS

Replace current claims 1 - 6 by the enclosed amended claims
1 - 6. A marked-up version of amended claims 1 - 6 is also enclosed.

REMARKS

Claims 1 - 6 are in the application.

As a result of the foregoing amendment, the claims have been
amended to remove improper multiple dependencies.

Any additional fees or charges required at this time in connection
with the application may be charged to our Patent and Trademark Office
Deposit Account No. 11-1835.

[illegible]

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in situ, after rotation into an engagement position, have correlated therewith complementary locking projections (8) of the pin end (9) and the intermediate ring (6), receptively, and in that a pressure ring (11) connected in front of the roll pin bearing (5) is positioned opposite the outer claws (17).

5. Device according to claim 1, wherein the inner claws (18) are arranged on a piston (20) of a hydraulic cylinder (21) which can be integrated into the change-over device (16).
6. Device according to claim 5, wherein the free piston end (22) facing away from the inner claws (18) is provided with a handwheel (23).

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MARKED-UP VERSION OF AMENDED CLAIMS

1. Device for mounting and demounting a bearing unit, comprised of a chock with a roll pin bearing arranged therein, of a back-up roll of a roll stand,
[characterized in that] wherein
a change-over device (16) can be coupled temporarily with the bearing unit (3) and is configured for generating an axial movement in the direction toward the back-up roll (1) and away from it.
2. Device according to claim 1,
[characterized in that] wherein
the change-over device (16) has lever-like inner claws (18) and lever-like outer claws (17), of which the inner claws (18) engage a pin end (9) of the back-up roll (1) and the outer claws (17) engage the bearing unit (3).
3. Device according to claim 2,
[characterized in that] wherein
the inner and outer claws (17, 18) are rotatable and can be locked like a bayonet closure in the pin end (9) and in the bearing unit (3), respectively.

4. Device according to claim 3,
[characterized in that] wherein
the pin end (9) and an intermediate ring (6) connected to the outer side of the bearing unit (3) are cloverleaf-shaped with through grooves (7; 19) for the inner and outer claws (17, 18) and that the claws (17, 18), in situ, after rotation into an engagement position, have correlated therewith complementary locking projections (8) of the pin end (9) and the intermediate ring (6), receptively, and in that a pressure ring (11) connected in front of the roll pin bearing (5) is positioned opposite the outer claws (17).
5. Device according to [one of the claims 2 to 4,
characterized in that] claim 1, wherein
the inner claws (18) are arranged on a piston (20) of a hydraulic cylinder (21) which can be integrated into the change-over device (16).
6. Device according to claim 5,
[characterized in that] wherein
the free piston end (22) facing away from the inner claws (18) is provided with a handwheel (23).

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The invention relates to a device for mounting and demounting a bearing unit, comprised of a chock with a roll pin bearing arranged therein, in connection with a back-up roll of a roll stand.

It is therefore an object of the present invention to provide a device with which the described disadvantages for back-up roll bearings can be avoided, which, in particular, reduces the expenditure of the bearing change, and which can be used variably.

This object is solved according to the invention by a change-over device which can be temporarily coupled to the bearing unit and is configured for generating an axial movement in the direction toward the back-up roll and away from it. By accordingly providing, on the one hand, a separate change-over device, i.e., a change-over device independent of the bearing unit, which, on the other hand, can be universally used for mounting as well as demounting the bearing unit, one change-over device is sufficient in order to mount or demount the bearing units; only when both bearing units of a back-up roll are to be changed at the same time, a second such change-over device is required. In no case, however, is it required any longer to provide each back-up roll of a roll stand with an integrated hydraulic removal device, as in the prior art. Aside from the fact that the change-over device is no longer exposed to the effects of the rolling operation, a simpler and lighter configuration results for the bearing units. The change-over device can advantageously be used in the bearing and roll shop, and it is only required to couple the device with the bearing unit to be demounted or newly installed in order to mount or demount with, if desired, a single change-over device all bearing units onto or from the respective back-up rolls.

According to one proposal of the invention, the change-over device has lever-like inner claws and lever-like outer claws, wherein the inner claws engage a pin end of the back-up rolls and the outer claws engage the bearing unit. The claws in this case provide the coupling means and serve at the same time for introducing the axial movement in order to push the bearing unit onto the roll pin or to remove it therefrom. Instead of a coupling via claws, the change-over device could also, for example, be coupled by a screw connection to the bearing unit.

In a further embodiment of the invention, the inner and outer claws are rotatable and can be locked like a bayonet closure in the pin end or in the bearing unit. After attaching or inserting the change-over device, the inner and outer claws must thus be rotated only by approximately 45° in order to ensure the locking action.

According to a preferred embodiment of the invention, the pin end and an intermediate ring, screwed externally onto the bearing unit, are cloverleaf-shaped, with through grooves for the inner and outer claws, and the claws have correlated therewith in situ, after rotation into an engagement position, complementary locking projections of the pin end or the intermediate ring, wherein, moreover, a pressure ring, connected in front of the roller pin bearing, is positioned opposite the outer claws. In this way, it can be achieved that the axial movement, introduced into the inner claws locked fixedly in the back-up roll, is deflected during removal into an oppositely oriented movement or force direction caused by the outer claws contacting the locking projections of the intermediate ring and, accordingly, removing the entire bearing unit from the roll pin. On the other hand, the claws press, as a result of the axial movement introduced into the inner claws being reversed also during mounting, onto the pressure ring so that the entire bearing unit is pushed onto the roll pin.

Even though the axial movement could be effected mechanically or by means of an electrical drive, for example, by means of a worm gear and a toothed rack, it is suggested advantageously that the inner claws are arranged on a piston of a hydraulic cylinder that can be integrated into the change-over device. Commercially available standard cylinders can be used for this purpose, and, as a result of the inventive separation of removal device and bearing unit,

oil mixing between the lubricant oil and the hydraulic oil required for the axial and rolling pin bearings cannot occur.

When preferably the free piston end facing away from the inner claws of the hydraulic cylinder is provided with a handwheel, the bayonet closure can be reached simply from the exterior, and this is possible uniformly for the entire change-over device. This requires that the through grooves for the inner and outer claws as well as the claws themselves are aligned with one another.

Further details and advantages of the invention result from the claims and the following description with the aid of one embodiment of the invention illustrated in the drawings. It is shown in:

Fig. 1 as a detail of a roll stand, not illustrated, the roll pin end of a back-up roll with bearing unit illustrated in longitudinal section during mounting by means of a change-over device;

Fig. 2 a section along the line II-II of Fig. 1; and

Fig. 3 the embodiment of Fig. 1 during the demounting process.

The Figs. 1 and 3 show only the roll pin 2 of a back-up roll 1, respectively. According to Fig. 1, a bearing unit 3 is mounted on the roll pin 2 which comprises a chock 4 with a roll pin bearing or axial bearing 5. An intermediate ring 6 is screwed onto the forward end of the bearing unit 3; the ring 6 has a shape like a cloverleaf and has alternately arranged through grooves 7 and locking projections 8 (compare Fig. 2).

On the roll pin 2, i.e., in the area of the roll pin end 9, a pressure ring 11 contacting the axial bearing 5 and a ring nut 12 threaded thereon are arranged on the locking ring 10. The locking ring 10 has also locking projections 13 which have correlated therewith through grooves 14, illustrated in dashed lines in Fig. 2, provided on the outer circumference of the roller pin end 9.

For mounting the bearing unit 3 in the operating position illustrated in Fig. 1, the bearing unit 3 is aligned and positioned exactly relative to the center of the back-up roll 1. The same holds true for the locking ring 10, whose locking projections 13 must to be aligned with the through grooves 14 of the roller pin end 9. Subsequently, the bearing unit 3 is carefully pushed onto the roll pin 2 and, by rotation of the locking ring 10, locked in the position illustrated in Fig. 2 on the back-up roll 1, i.e., its roll pin 2. The securing segment 15 subsequently mounted prevents then an unwanted rotation of the locking ring 10. For preparing the final mounting of the bearing unit 3, the ring nut 12 is screwed on as far as possible.

After completion of these preparatory measures, a change-over device 16 is attached which has four outer claws 17 positioned at identical spacing from one another and four inner claws 18 also spaced at an identical spacing from one another. The inner claws 18 are correlated with through grooves 19, illustrated in more detail in Fig. 2, in the roll pin end 9 at the end face. When inserting the change-over device 16, the outer claws 17 thus penetrate through the through grooves 9 of the intermediate ring 6 and the inner claws 18 through the through grooves 19, and, upon rotation by 45° , they reach their engagement position, illustrated in Figs. 1 and 2, in which the outer claws 17 are locked on the intermediate ring 6, i.e., its locking projections 8, and the inner

claws 19 are locked on the backup-roll 1, i.e., on its roll pin end 9. In the embodiment, the inner claws 18 are arranged on the cylinder piston 20 of a hydraulic cylinder 21 fastened on the change-over device 16 whose free cylinder piston end 22 is provided with a handwheel 23. During manipulation of the change-over device 16 with a swinging crane, not illustrated, the handwheel 23 provides in a simple way the possibility to perform the locking rotation of the claws.

When the hydraulic cylinder 21 is now loaded with pressure in the direction of the arrow illustrated in bold face, the change-over device 16, secured on the back-up roll 1 by means of the inner claws 18, presses via its outer claws 17 the pressure ring 11 against the roll pin bearing or axial bearing 5. In this way, the bearing unit 3 with its pin bushing 24 is pushed increasingly onto the cone of the roll pin 2 until it reaches the end position according to Fig. 1.

For securing this mounting position, the ring nut 12 is tightened to the dead stop. The claws 17, 18 are then aligned with the complementary through grooves 7 and 19 so that the change-over device 16 can be removed. When the holding segment 15 is secured by screwing on the ring nut 12, the ring nut is secured against detachment. As soon as the previously opened closure lid 25 has been pivoted into its closed position (illustrated in dash-dotted line in Fig. 1), in which it encapsulates the roll pin 2, the rolling operation can be started again.

The removal process illustrated in Fig. 3 is carried out in reverse, but otherwise identical, sequence of the afore described attachment of the change-over device 16 - which is, however, preceded by the detachment of the holding segment 15 from the ring

nut 12. By loading the cylinder piston 20 of the hydraulic cylinder 21 in the direction of the bold faced arrow, pressure is applied to the pressure ring 11 and the ring nut 12 is relieved which can then be removed so that the holding segment 15 (see Fig. 1) can be removed - which, for this reason, is not illustrated in Fig. 3. By rotation of the locking ring 10 by 45°, the bearing unit 3 is unlocked. After renewed application of hydraulic pressure, the change-over device 16, secured on the back-up roll 1 by means of the inner claws 18, pulls via the outer claws 17, which now contact the locking projections 8 of the intermediate ring 6, the intermediate ring 6 and thus the entire bearing unit 3 with the pin bushing 24 from the cone of the roll pin 2, as illustrated in Fig. 3. As soon as the pin bushing 24 is free, the hydraulic pressure can be switched off and the change-over device 16, as described in connection with mounting according to Fig. 1, can be removed. The bearing unit with the chock 4 and the axial bearing 5 is free in order to be removed carefully from the back-up roll 1.

Claims

1. Device for mounting and demounting a bearing unit, comprised of a chock with a roll pin bearing arranged therein, of a back-up roll of a roll stand, characterized in that a change-over device (16) can be coupled temporarily with the bearing unit (3) and is configured for generating an axial movement in the direction toward the back-up roll (1) and away from it.
2. Device according to claim 1, characterized in that the change-over device (16) has lever-like inner claws (18) and lever-like outer claws (17), of which the inner claws (18) engage a pin end (9) of the back-up roll (1) and the outer claws (17) engage the bearing unit (3).
3. Device according to claim 2, characterized in that the inner and outer claws (17, 18) are rotatable and can be locked like a bayonet closure in the pin end (9) and in the bearing unit (3), respectively.
4. Device according to claim 3, characterized in that the pin end (9) and an intermediate ring (6) connected to the outer side of the bearing unit (3) are cloverleaf-shaped with through grooves (7; 19) for the inner and outer claws (17, 18) and that the claws (17, 18), in situ, after rotation into an engagement position, have correlated therewith complementary locking projections (8) of the pin end (9) and the

intermediate ring (6), receptively, and in that a pressure ring (11) connected in front of the roll pin bearing (5) is positioned opposite the outer claws (17).

5. Device according to one of the claims 2 to 4, characterized in that the inner claws (18) are arranged on a piston (20) of a hydraulic cylinder (21) which can be integrated into the change-over device (16).
6. Device according to claim 5, characterized in that the free piston end (22) facing away from the inner claws (18) is provided with a handwheel (23).

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro



(43) Internationales Veröffentlichungsdatum
29. März 2001 (29.03.2001)

PCT

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WO 01/21333 A2

(51) Internationale Patentklassifikation⁷: **B21B**
(21) Internationales Aktenzeichen: **PCT/EP00/09058**
(22) Internationales Anmeldedatum:
16. September 2000 (16.09.2000)
(25) Einreichungssprache: **Deutsch**
(26) Veröffentlichungssprache: **Deutsch**
(30) Angaben zur Priorität:
199 45 070.6 20. September 1999 (20.09.1999) **DE**
(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von
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(81) Bestimmungsstaaten (national): **BR, CA, CN, IN, JP, KR,**
MX, RU, US.

(84) Bestimmungsstaaten (regional): **europäisches Patent (AT,**
BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE).

Veröffentlicht:

— **Ohne internationalen Recherchenbericht und erneut zu**
veröffentlichen nach Erhalt des Berichts.

*Zur Erklärung der Zweibuchstaben-Codes, und der anderen
Abkürzungen wird auf die Erklärungen ("Guidance Notes on
Codes and Abbreviations") am Anfang jeder regulären Ausgabe
der PCT-Gazette verwiesen.*

(72) Erfinder; und
(75) Erfinder/Anmelder (nur für US): **MÜLLER,**
Karl-Friedrich [DE/DE]; Im Streitplatz 3, 57339

WO 01/21333 A2

(54) Title: **DEVICE FOR RAISING AND WITHDRAWING A BACK-UP ROLL BEARING UNIT**

(54) Bezeichnung: **VORRICHTUNG ZUM AUF- UND ABZIEHEN EINER STÜTZWALZEN-LAGEREINHEIT**

(57) Abstract: The invention relates to a device for raising and withdrawing a bearing unit of a back-up roll of a roll stand. Said bearing unit is comprised of a piece to be inserted inside which has a roll pin bearing arranged therein. According to the invention, a change-over device is configured so that it can be temporarily coupled to the bearing unit and is provided for effecting an axial movement toward and away from the back-up roll.

(57) Zusammenfassung: Bei einer Vorrichtung zum Auf- und Abziehen einer aus einem Einbaustück mit einem darin angeordneten Walzenzapfenlager bestehenden Lagereinheit einer Stützwalze eines Walzgerüsts ist eine Wechseleinrichtung temporär mit der Lagereinheit kuppelbar und zur Erzeugung einer Axialbewegung in Richtung auf die Stützwalze und von dieser weg ausgebildet.

Fig.1

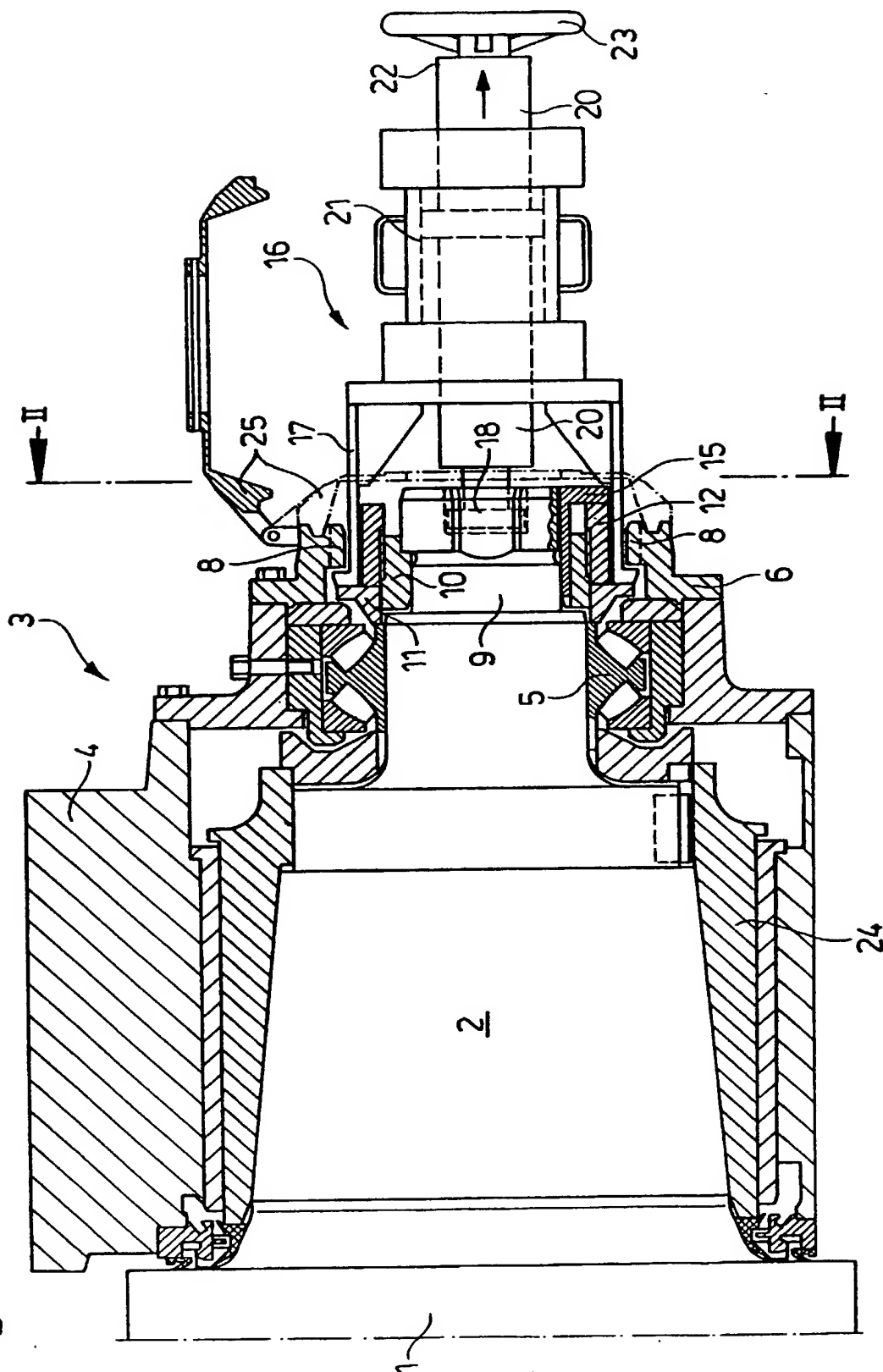
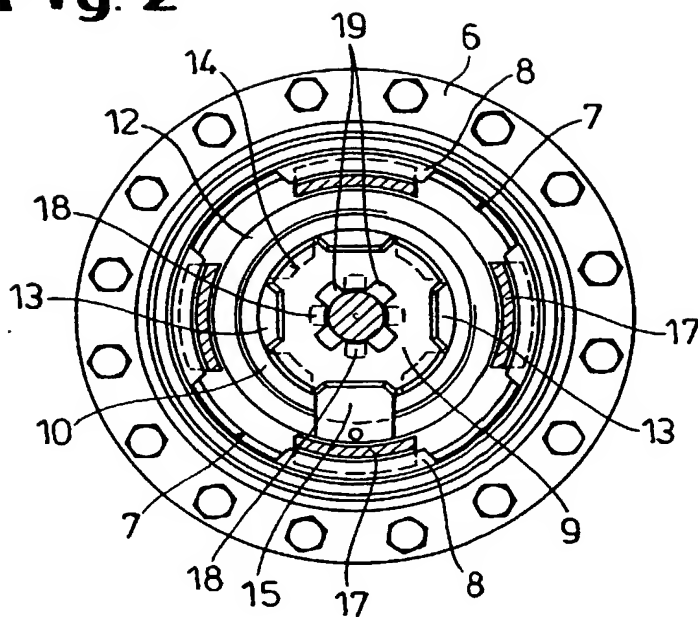


Fig. 2



3/3

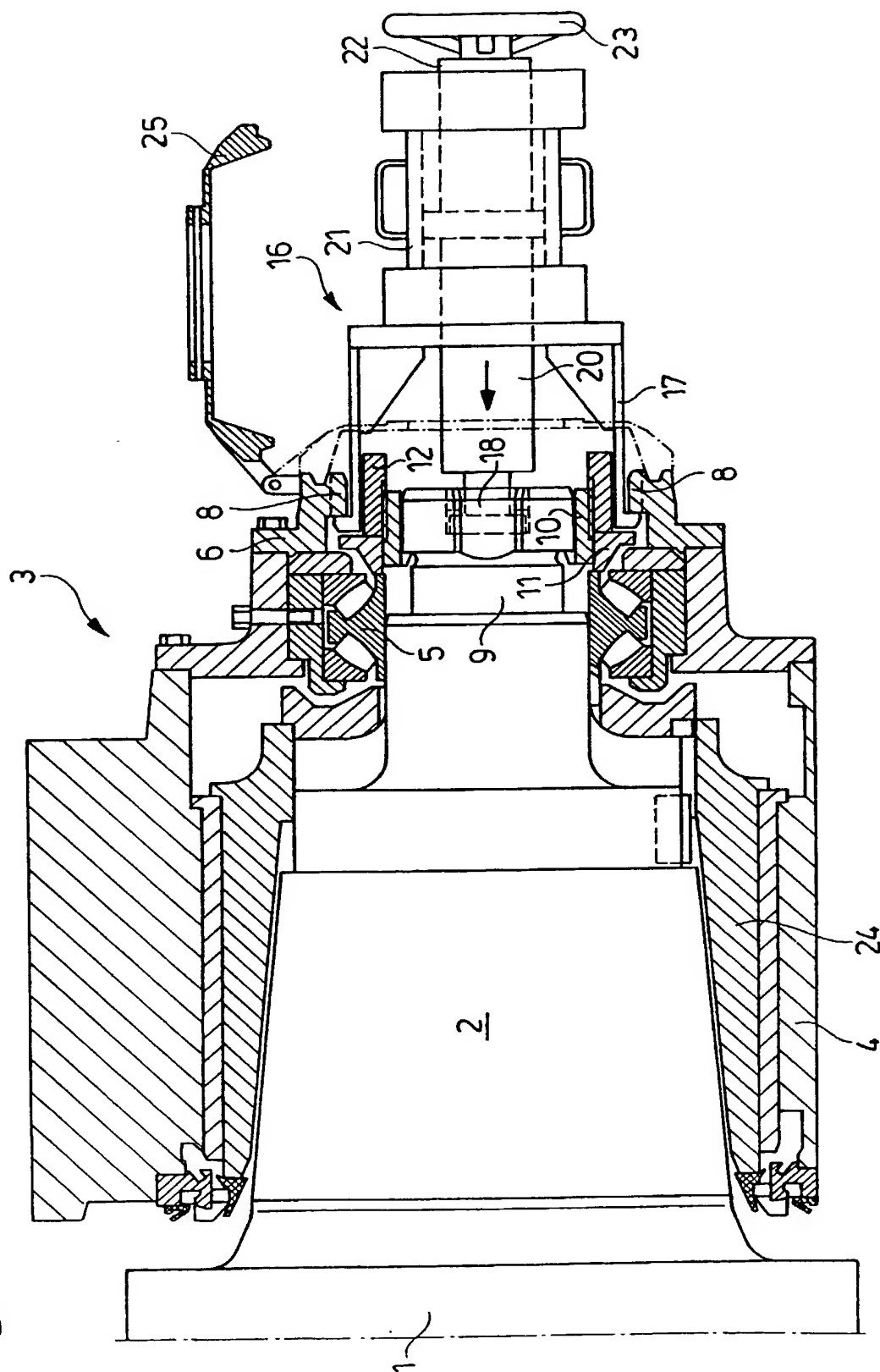


Fig. 3

COMBINED DECLARATION FOR PARENT APPLICATION AND POWER OF ATTORNEY
(includes Reference to PCT International Applications)

Attorney's Docket No.
HM-480

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: DEVICE FOR MOUNTING AND DEMOUNTING A BACK-UP ROLL BEARING UNIT ✓

the specification of which (check only one item below):

☐

is attached hereto.

☐

was filed as United States application

Serial No. _____
on _____,
and was amended
on _____ (if applicable).

☒

was filed as PCT international application

Number PCT/EP00/09058 ✓
on September 16, 2000 ✓
and was amended under PCT Article 19
on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT, indicate PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
GERMANY ✓	199 45 070.6 ✓	20 September 1999 ✓	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

Combined Declaration For Parent Application and Power of Attorney (Continued)
(includes Reference to PCT International Applications)

Docket No.
HM-480

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of the application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty of disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120:

U.S. APPLICATIONS		STATUS (CHECK ONE)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NO.		

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)

FRIEDRICH KUEFFNER, REG. NO. 29,482

Send Correspondence to:

FRIEDRICH KUEFFNER
342 MADISON AVENUE, SUITE 1921
NEW YORK, N.Y. 10173

Direct Telephone Calls to:

FRIEDRICH KUEFFNER
(212) 986-3114


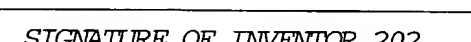
1-00	FULL NAME OF INVENTOR	<u>Family Name</u> <u>Müller</u>	<u>First Given Name</u> <u>Karl-Friedrich</u>	<u>Second Given Name</u>
	RESIDENCE & CITIZENSHIP	<u>City</u> <u>Erndtebrück</u> <u>DEX</u>	<u>State Or Foreign Country</u> <u>Germany</u>	<u>Citizenship</u> <u>Germany</u> ✓
1	POST OFFICE ADDRESS	<u>Post Office Address</u> <u>Im Streitplatz 3</u>	<u>City</u> <u>57339 Erndtebrück</u>	<u>State & Zip Code</u> <u>Germany</u>

Docket No.
HM-480

820	FULL NAME OF INVENTOR	<u>Family Name</u> <u>Kunze</u>	<u>First Given Name</u> <u>Volker</u>	<u>Second Given Name</u>
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2	FULL NAME OF INVENTOR	<u>Family Name</u>	<u>First Given Name</u>	<u>Second Given Name</u>
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE OF INVENTOR 201 	SIGNATURE OF INVENTOR 202 	SIGNATURE OF INVENTOR 203
DATE 29.04.02	DATE 29.04.02	DATE